

In the Claims:

1-7. Cancelled

8. (Previously Presented) In a method of affecting cleaning to remove AlF_3 residue from walls of a reactor chamber, the method comprising the steps of:

a) identifying cleaning process conditions of plasma containing H_2 -gases that maximize H-atom concentration in said plasma of a gas mixture containing H_2 and Ar using optical emission spectroscopy or actinometry to identify the H atom concentration in the plasma based on the relative emission intensity from excited H and Ar atoms by the formula:

$$\frac{\text{intensity of H}}{\text{intensity of Ar}} \sim \text{H atom concentration};$$

said cleaning process conditions including one or more of flow rate, pressure, and RF power;

b) subjecting said reactor chamber in situ to a gas mixture of He/ H_2 for striking a plasma then subjecting said reactor chamber in situ to H_2 gas according to the cleaning process conditions identified in step a) without opening said chamber and without shutting down said chamber to affect reduction and removal of said AlF_3 residue.

9-25. Cancelled